

Electromedical Equipment and Analytical Instruments: 2006

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SUMMARY OF FINDINGS. During 2006, the total value of shipments of electromedical equipment and analytical instruments totaled \$37.0 billion, up 6.4 percent from the revised 2005 value of \$34.7 billion. The 2006 data includes all other miscellaneous optical instruments and lenses, \$2.1 billion, up 8.3 percent from 2005; electromedical equipment, including diagnostic, therapeutic, and patient monitoring equipment, excluding ionizing radiation equipment, \$19.2 billion, an increase of 5.5 percent from 2005; analytical and scientific instruments (except optical), \$8.6 billion, up 6.8 percent from 2005; irradiation (ionizing radiation) equipment, \$7.0 billion, up 8.3 percent from 2005.

For general CIR information, explanation of general terms and historical note, see the appendix.

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For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-763-4673.

U S C E N S U S B U R E A U

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Economics and Statistics Administration
U.S. CENSUS BUREAU

Table 1. Value of Shipments of Electromedical Equipment and Analytical Instruments: 2001 to 2006
[Millions of dollars]

Product class code	Product description	2006	2005	2004	2003	2002	2001
3333143	All other miscellaneous optical instruments and lenses...	2,124.0	1,960.8	1,871.2	1,702.6	2,174.4	2,302.9
3345101	Electromedical equipment, including diagnostic, therapeutic, and patient monitoring equipment, excluding ionizing radiation equipment.....	19,235.2	r/ 18,240.5	13,611.1	11,747.0	12,125.7	11,088.3
3345160	Analytical and scientific instruments (except optical).....	8,632.8	8,086.5	7,544.6	7,918.2	7,271.9	7,873.3
3345170	Irradiation (ionizing radiation) equipment.....	6,990.4	r/ 6,454.1	4,971.2	4,873.5	4,524.2	4,283.5

r/Revised by 5 percent or more from previously published data.

Table 2. Value of Shipments of Electromedical Equipment and Analytical Instruments: 2006 and 2005
[Value in thousands of dollars]

Product code	Product description	No. of cos.	2006 Value	2005 Value
3333143	Optical instruments and lenses.....	154 a/	2,123,965	a/ 1,960,799
3333143119	Binoculars and astronomical instruments, parts and accessories, including mountings.....	17 a/	125,587	a/r/ 116,276
3333143231	Optical test and inspection equipment.....	32 a/	222,746	a/r/ 200,040
3333143232	Optical instruments used for inspecting semiconductors, wafers, and photo masks.....	6 (D)		r/ 126,096
	Optical components:			
3333143235	Filters.....	27 a/	193,944	163,531
3333143237	Unmounted lenses.....	42	263,251	r/ 262,807
3333143242	Mounted lenses.....	19 (D)		136,870
3333143243	Other optical components.....	48 a/	195,828	a/r/ 164,610
3333143245	Other optical instruments.....	49	665,786	r/ 591,132
3333143251	Parts and accessories.....	28 c/	153,314	c/r/ 199,437
3345101	Electromedical equipment, including diagnostic, therapeutic and patient monitoring equipment excluding ionizing radiation equipment.....	125 a/	19,235,192	r/ 18,240,498
	Medical diagnostic equipment:			
3345101106	Ultrasound scanning devices.....	12	1,689,592	b/r/ 1,672,165
3345101109	Electrocardiograph (EKG).....	7	127,469	r/ 132,458
3345101124	All other medical diagnostic equipment.....	29	2,674,896	r/ 2,549,410
	Patient monitoring equipment:			
3345101227	Intensive care/coronary care units, including component modules such as temperature, blood pressure, and pulse.....	15 a/	357,473	a/r/ 327,322
3345101233	Prenatal and respiratory monitoring.....	10	97,100	r/ 92,732
3345101237	All other patient monitoring.....	22	1,844,962	r/ 1,650,152
	Medical therapy equipment:			
3345101241	Ultrasound therapy.....	5	25,132	27,799
3345101247	Defibrillators.....	10	2,748,507	2,666,802
3345101251	Dialyzers, includes machines and equipment.....	5	934,919	a/r/ 876,598
3345101254	Medical laser equipment.....	11 a/	625,885	r/ 559,832
3345101257	All other medical therapy equipment.....	26	3,297,451	r/ 3,271,122
	Surgical systems:			
3345101361	Electrosurgical equipment.....	9	405,618	r/ 364,142
3345101367	Blood flow systems.....	5 (D)		(D)
3345101371	All other surgical support systems.....	15 (D)		(D)
3345101374	Other electromedical and electrotherapeutic apparatus.....	9 c/	1,191,094	a/r/ 1,203,938
3345101477	Electromedical and electrotherapeutic parts and accessories.....	31 a/	2,253,705	r/ 2,011,423
3345160	Analytical and scientific instruments (except optical).....	225 a/	8,632,812	8,086,528
3345160111	Electrochemical instruments.....	31 b/	225,981	a/r/ 199,901
3345160112	Chromatographic instruments.....	33	1,084,635	r/ 1,091,977
3345160134	Spectrophotometric instruments.....	50 b/	977,789	a/ 804,398
3345160135	Thermal analysis instruments.....	9	291,785	283,189
3345160145	Mass spectroscopy instruments.....	13 a/	484,488	a/r/ 481,283
	Laboratory instrumentation, includes instruments used in clinical laboratory for measuring, analyzing, and processing clinical specimens:			
3345160147	Chemistry-measure and identify substances, e.g., metabolites, enzymes, and drugs.....	12	922,545	906,176
3345160149	Hematology-measure and identify substances or cells contained in blood or substances influencing the development and clotting of blood, e.g., blood cell counting coagulation factors.....	11	666,625	r/ 620,173
3345160151	Microbiology-enumerate or identify pathogenic organisms or measure their susceptibility to antimicrobial agents.....	4 (D)		(D)
3345160153	DNA sequencer.....	-	-	(D)

Table 2. Value of Shipments of Electromedical Equipment and Analytical Instruments: 2006 and 2005
[Value in thousands of dollars]

Product code	Product description	No. of cos.	2006 Value	2005 Value
3345160154	DNA thermocycler.....	-	-	-
3345160155	Blood bank and immunology-process blood and specimens for testing; measure and identify, using immunoassay, substances in clinical specimens.....	5	264,265	276,047
3345160160	Other clinical laboratory instrumentation.....	12	(D)	a/ 254,207
3345160162	Organic elemental analysis instruments (carbon, hydrogen, nitrogen, oxygen, sulphur).....	11 b/	139,850	b/r/ 131,055
3345160163	Gas detectors.....	21 b/	167,028	a/r/ 159,559
3345160165	Other analytical and scientific instruments	99 a/	1,647,058	a/r/ 1,334,712
3345160167	Parts--components and accessories for analytical and scientific instruments, sold separately.....	89 a/	1,253,429	a/ 1,317,007
3345170	Irradiation (ionizing radiation) equipment.....	62	6,990,374	r/ 6,454,135
	Medical diagnostic equipment:			
	Medical X-ray equipment:			
3345170103	Digital radiography equipment.....	5	(D)	(D)
3345170106	Computerized axial tomography (CT or CAT scan).....	4	1,492,077	r/ 1,394,657
3345170112	All other medical diagnostic X-ray equipment, including dental and conventional.....	22	1,009,943	r/ 1,025,512
3345170115	Nuclear medicine equipment.....	9	1,175,509	r/ 1,075,487
	Other irradiation apparatus:			
3345170121	Industrial and scientific X-ray equipment.....	15 b/	502,827	c/r/ 509,051
3345170124	X-ray tubes, sold separately.....	10	(D)	(D)
3345170332	Other irradiation equipment, including parts and accessories for X-ray equipment.....	29	1,691,064	r/ 1,521,194

- Represents zero. D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data.

Note: Percent of estimation for each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Shipments, Exports, and Imports of Electromedical Equipment and Analytical Instruments: 2006
[Value in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value of f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption (value) 2/ 3/
3333143119	Binoculars and astronomical instruments, parts and accessories, including mountings.....	125,587	118,368	273,587
3333143231, 235, 237, 242, 243, 245, 251	Optical instruments and lenses.....	(D)	2,476,206	600,300
3345101106	Ultrasound scanning devices, medical diagnostic.....	1,689,592	695,187	282,493
3345101109	Electrocardiograph (EKG), medical diagnostic.....	127,469	62,570	23,226
3345101124	All other medical diagnostic equipment.....	2,674,896	1,751,216	1,392,084
3345101247, 254, 257	Therapeutic electromedical equipment.....	6,671,843	755,192	937,536
3345101227, 233, 237	Patient monitoring equipment.....	2,299,535	291,510	371,217
3345101241	Ultrasound therapy equipment.....	25,132	15,562	3,987
3345101251	Dialyzers, including machines and equipment.....	934,919	68,535	14,494
3345101361	Electrosurgical equipment.....	405,618	1,189,610	352,484
3345101367, 371, 374	Surgical systems equipment.....	2,152,483	535,806	447,343
3345101477	Electromedical and electrotherapeutic parts and accessories.....	2,253,705	1,006,879	1,356,630
3345160	Analytical and scientific instruments (except optical)....	8,632,812	2,957,238	1,931,082
3345170106	Computerized axial tomography (CT or CAT scan).....	1,492,077	470,106	628,731
3345170103, 112, 115 332	Digital radiography, nuclear medicine, and other medical diagnostic X-ray and irradiation equipment, including parts and accessories for X-ray equipment...	(D)	1,807,447	2,252,665
3345170121	Industrial and scientific X-ray equipment.....	502,827	285,077	142,698
3345170124	X-ray tubes, sold separately.....	(D)	285,353	301,870

D Withheld to avoid disclosing data for individual companies.

1/Source: Census Bureau report, EM 545 U.S. Exports.

2/Source: Census Bureau report, IM 145 U.S. Imports for Consumption.

3/Value represents c.i.f. (cost, insurance and freight) value at port of entry in the United States plus import duties.

Note: For comparison of the North American Industry Classification System (NAICS)-based product codes with Schedule B export codes, and HTSUSA import codes, see Table 4.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2006

Product code	Product description	Export code 1/	Import code 2/
3333143119	Binoculars and astronomical instruments, parts and accessories, including mountings.....	9005.10.0020	9005.10.0020
		9005.10.0040	9005.10.0040
		9005.10.0080	9005.10.0080
		9005.80.4020	9005.80.4020
		9005.80.4040	9005.80.4040
		9005.80.6000	9005.80.6000
		9005.90.0000	9005.90.4000 9005.90.8000
3333143231, 235, 235, 242, 243, 245, 251	Optical instruments and lenses.....	9011.10.0000	9011.10.4000
		9011.20.0000	9011.10.8000
		9011.80.0000	9011.20.4000
		9011.90.0000	9011.20.8000
		9031.41.0000	9011.80.0000
		9031.90.0000	9011.90.0000
			9031.41.0020
			9031.41.0040
			9031.41.0060
			9031.90.4500 9031.90.5400 9031.90.5800
3345101106	Ultrasound scanning devices, medical diagnostic.....	9018.12.0000	9018.12.0000
3345101109	Electrocardiograph (EKG), medical diagnostic.....	9018.11.0040	9018.11.3000
3345101124	All other medical diagnostic equipment.....	9018.13.0000	9018.13.0000
		9018.19.4000	9018.19.4000
		9018.19.9530	9018.19.9530
		9018.19.9535	9018.19.9535
		9018.19.9550	9018.19.9550
3345101247, 254, 257	Therapeutic electromedical equipment.....	9018.90.7060	9018.20.0040
		9021.50.0000	9018.90.6400
			9018.90.7560
			9021.50.0000
3345101227, 233, 237	Patient monitoring equipment.....	9018.19.5500	9018.19.5500
3345101241	Ultrasound therapy equipment.....	9018.90.7040	9018.90.7540
3345101251	Dialyzers, including machines and equipment.....	9018.90.7020	9018.90.7520
3345101361	Electrosurgical equipment.....	9018.90.6000	9018.90.6000
3345101367, 371 374	Surgical systems equipment.....	9018.20.0000	9018.20.0080
		9018.90.7080	9018.90.7580
3345101477	Electromedical and electrotherapeutic parts and accessories.....	9018.11.0080	9018.11.9000
		9018.19.7500	9018.19.7500
		9018.19.9560	9018.19.9560
		9018.90.7070	9018.90.7570
3345160	Analytical and scientific instruments (except optical).....	9012.10.0000	9012.10.0000
		9027.20.2000	9027.20.5030
		9027.20.5030	9027.20.5050
		9027.20.6050	9027.20.5060
		9027.20.9000	9027.20.5080

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2006

Product code	Product description	Export code 1/	Import code 2/
	Analytical and scientific instruments (except optical) (Continued)	9027.30.4040	9027.20.8030
		9027.30.4080	9027.20.8060
		9027.50.2000	9027.20.8090
		9027.50.5000	9027.30.4040
		9027.80.2000	9027.30.4080
		9027.80.3100	9027.50.4015
		9027.80.3200	9027.50.4020
		9027.80.3500	9027.80.4520
		9027.80.8000	9027.80.4530
			9027.80.4560
			9027.80.4590
			9027.80.8030
			9027.80.8060
			9027.80.8090
			9027.90.8400
			9027.90.8800
3345170106	Computerized axial tomography (CT or CAT scan).....	9022.12.0000	9022.12.0000
3345170103, 112, 115, 332	Digital radiography, nuclear medicine, and other medical diagnostic X-ray and irradiation equipment, including parts and accessories for X-ray equipment.....	9022.13.0000	9022.13.0000
		9022.14.0000	9022.14.0000
		9022.21.0000	9022.21.0000
		9022.29.8000	9022.29.8000
		9022.90.4000	9022.90.4000
		9022.90.6000	9022.90.6000
		9022.90.8000	9022.90.9500
3345170121	Industrial and scientific X-ray equipment.....	9022.19.0000	9022.19.0000
3345170124	X-ray tubes, sold separately.....	9022.30.0000	9022.30.0000

1/Source: 2006 Edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2006).

Appendix.

General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected electronic and associated products have been collected by the Census Bureau since 1961 on survey MA36N, Selected Electronics and Associated Products. In 1985, survey MA36N was divided into three annual surveys which are presently collected as: MA334P, Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment; MA334Q, Semiconductors, Printed Circuit Boards, and Other Electronic Components; and MA334S, Electromedical and Irradiation Equipment (Including X-Ray).

Data on selected instruments and related products have been collected by the Census Bureau since 1961 on survey MA334B.

Beginning in 2005, MA334S, Electromedical and Irradiation Equipment, and a portion of data for MA334B, Selected Instruments and Related Products, will be published under a new survey titled MA334A, Electromedical Equipment and Analytical Instruments. Additional data for MA334B can be found on surveys MA334C, Control Instruments, MA334D, Defense, Navigational and Aerospace Electronics, and MA334T, Meters and Test Devices. Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.